INDEX ISSUE

THE DEPARTMENT OF NATURAL RESOURCES

mississippi geology

Bureau of Geology
2525 North West Street
Jackson, Mississippi 39216

Volume 6, Number 1
September 1985

"...AND THE BONES CAME TOGETHER, BONE TO HIS BONE." Ezekiel 37:7

THE MAKING OF A STATE FOSSIL

MAR 17 1986

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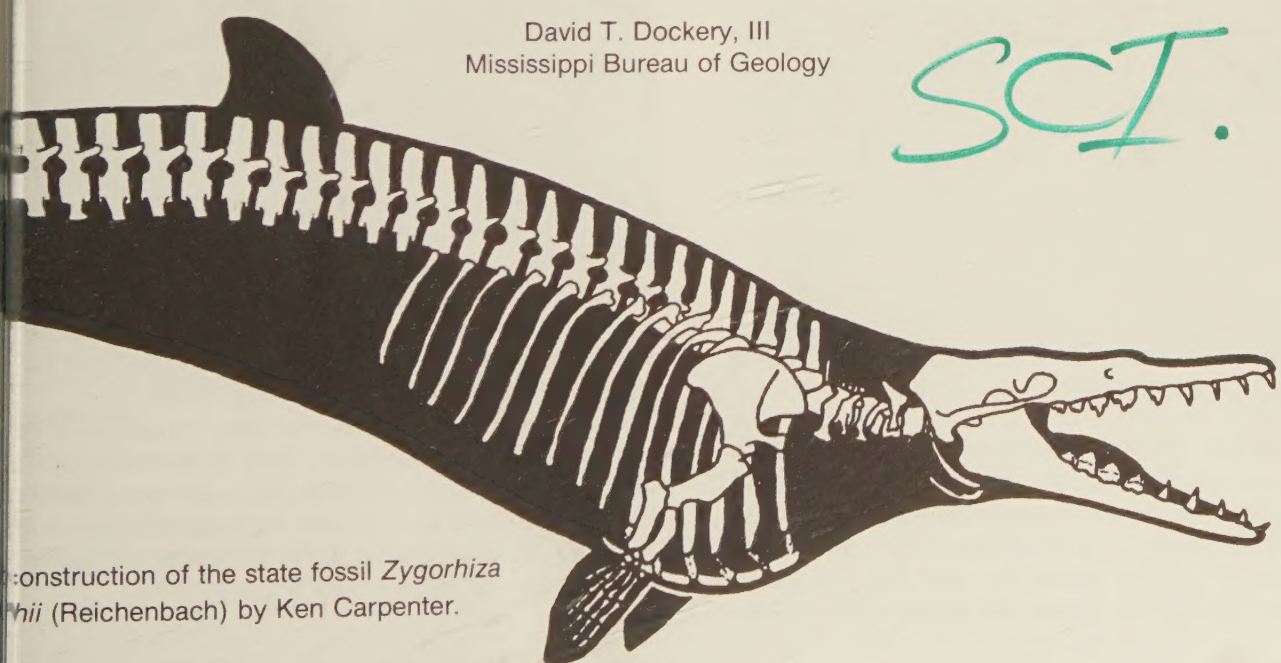

:onstruction of the state fossil *Zygorhiza* *hii* (Reichenbach) by Ken Carpenter.

Figure 1. Excavation of *Zygorhiza kochii* bones from the bed of Thompson Creek by members of the Mississippi Gem and Mineral Society.

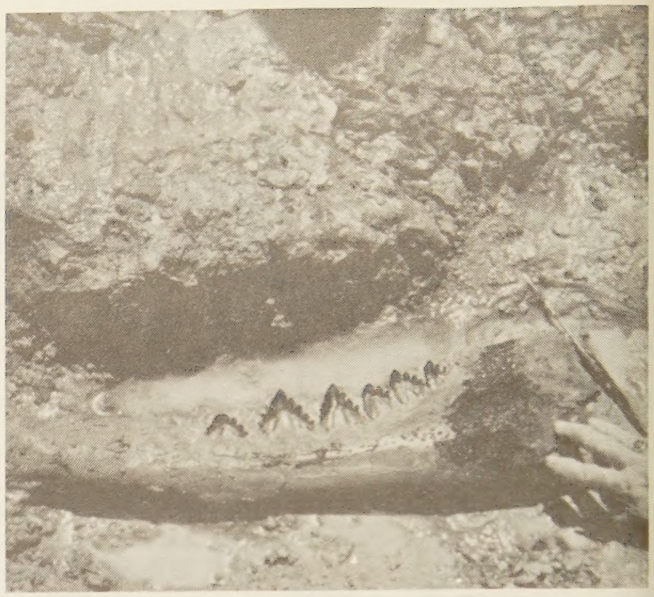

Figure 2. Excavation of the left mandible from the clayey sand of the Moodys Branch Formation.

A nearly complete skeleton of the Late Eocene (40 million years) archaeocete whale, *Zygorhiza kochii* (Reichenbach), was excavated by the Mississippi Gem and Mineral Society in June 1971. This specimen is probably the most complete and best preserved archaeocete whale found to date. Its discovery generated public interest in the fossil whale as well as Mississippi's geologic past, and motivated the passage of Senate Concurrent Resolution no. 557 (see *Mississippi Geology*, v. 3, no. 3, p. 13) designating "the prehistoric whale as the official fossil of the State of Mississippi." To mount the whale skeleton for public display, fund drives were made, including foot races and donations from schools. Today the skeleton is restored and prominently mounted in a life-like diving posture from the back wall of the Mississippi Museum of Natural Science. The following is a brief pictorial narrative of the history of the State's fossil from the time of its discovery to its present placement in the Mississippi Museum of Natural Science.

The *Zygorhiza* specimen was discovered by Mrs. Dorothy Shaefer on June 31, 1971, in the bed of Thompson Creek near Tinsley, Mississippi. While searching for petrified wood and agates in the stream gravels, she noticed a concentration of large fossil bones in the Eocene sediments (Moodys Branch Formation) which formed the stream bed. She reported her discovery to the members of the Mississippi Gem and Mineral Society, and the society's members began an excavation of the bones the next day (Figure 1). Included among the bones excavated were a well-preserved skull and two mandibles (Figure 2).

The initial preparation of the skeleton was begun by Leslie Pitts, and involved freeing the bones from the encasing rock. This process was later completed by Kenneth Carpenter with the use of a miniature jackhammer called a Gravermeister (Figure 3). Damaged bones were repaired using molding plaster painted to match the color of the bone (Figure 4).

Missing parts, such as the flippers, were reconstructed using hardware cloth overlain with plaster or papier-mache (Figures 5-6). These reconstructed bones were also painted to resemble the fossil bones.

Light-weight fiberglass replicas of the skull and jaws were prepared. Two molds were made for each part by first placing a clay partition around the bones which became the seam, then layers of latex rubber were applied (Figure 7). After the latex had cured, a plaster back called a mother mold was made to keep the latex form from distorting when the casts were made. This mold was constructed in several sections for the skull to allow removal of the cast when finished (Figure 8). Upon completion of the latex and plaster molds for one half of the specimen, the clay seam was removed, and the molds for the second half were made.

After the mother molds and latex molds were removed from the specimens, they were reassembled and layers of reinforced fiberglass resin were applied to make the casts. When cured, the casts were removed, trimmed of excess plastic along the seams, and painted to resemble the fossil bones (Figures 9-10).

gure 3. Ken Carpenter removing bones from a block indurated sediments.

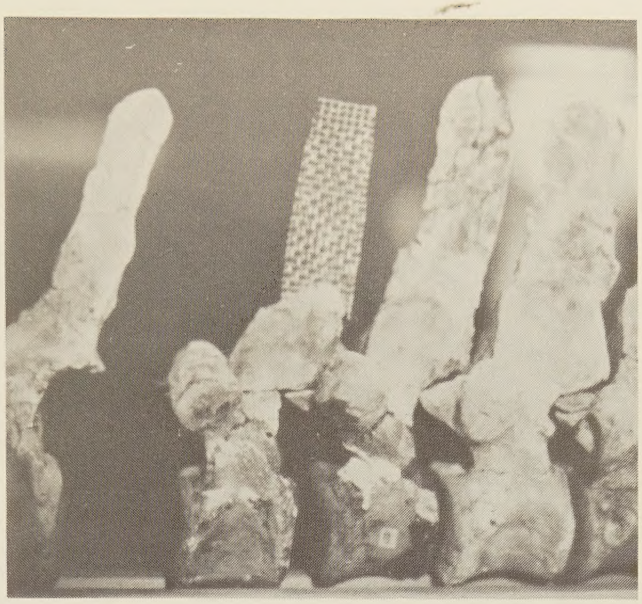

Figure 4. Reconstruction of a partially complete vertebra using plaster over steel mesh.

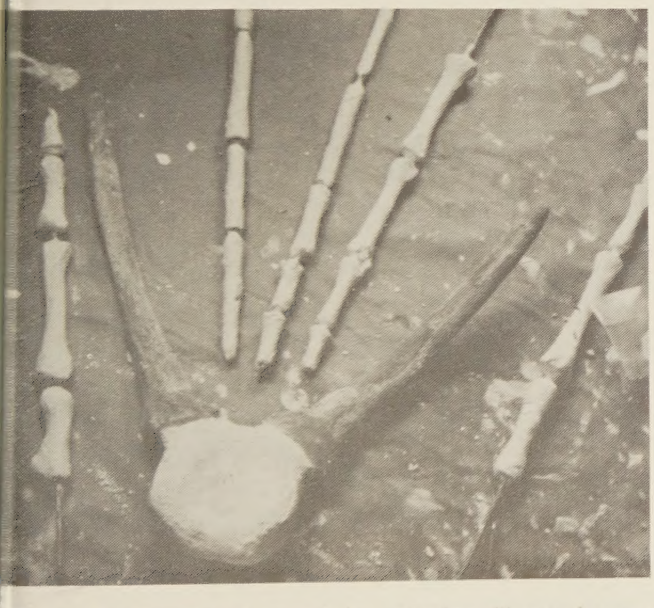

Figure 5. Construction of the missing flipper bones based on observations of specimens from various museums.

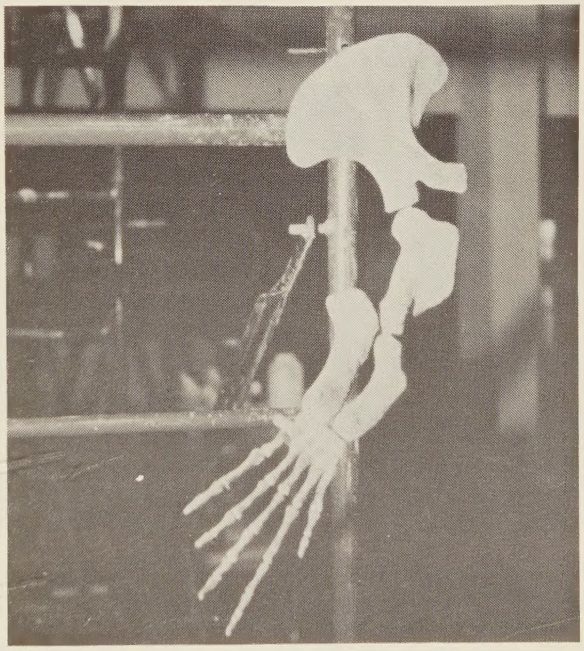

Figure 6. The newly constructed left flipper before mounting.

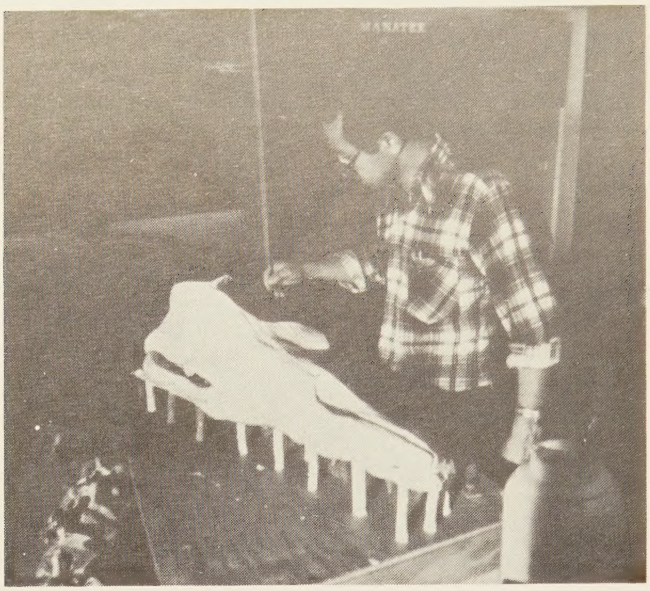

Figure 7. Applying layers of latex rubber to the dorsal side of the skull to form the upper mold.

Figure 8. The disassembled plaster mother mold for the dorsal half of the skull.

Figure 9. Eleanor Daly trimming excess fiberglass from the seam of the ventral cast of the skull.

Figure 10. Joining the dorsal and ventral casts of the skull along the seams.

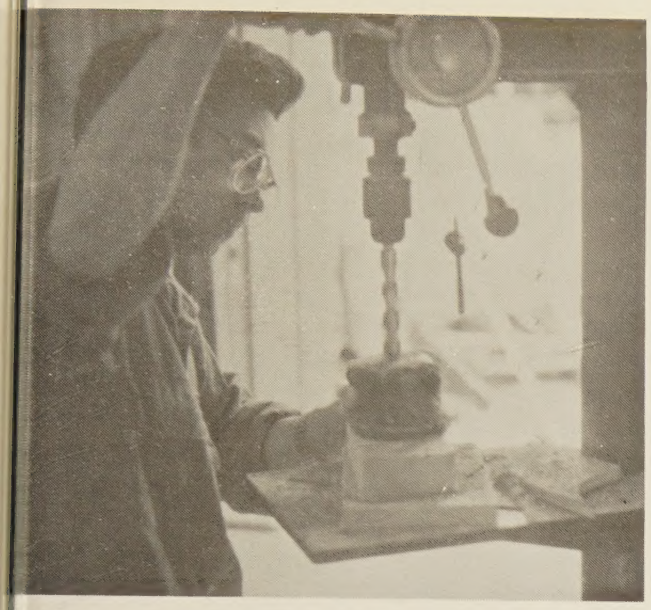

Figure 11. Ken Carpenter drilling a vertebra for mounting.

Figure 12. Drilled and undrilled vertebrae.

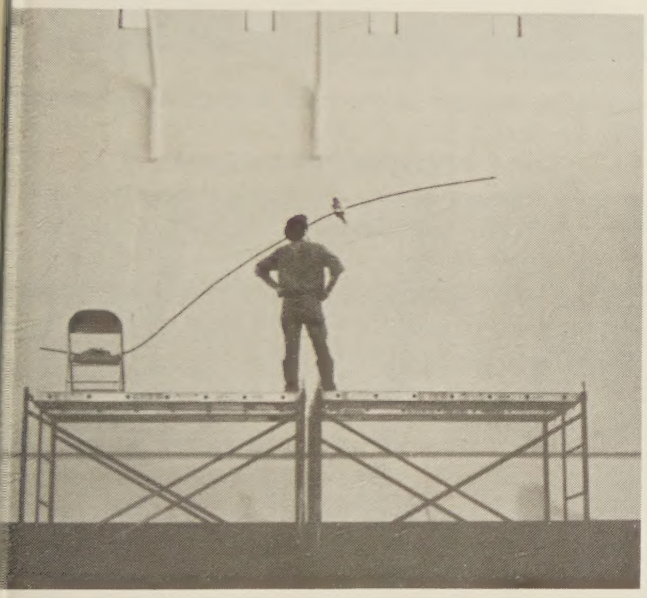

Figure 13. Placement of the first vertebra on the steel rod which will support the vertebral column.

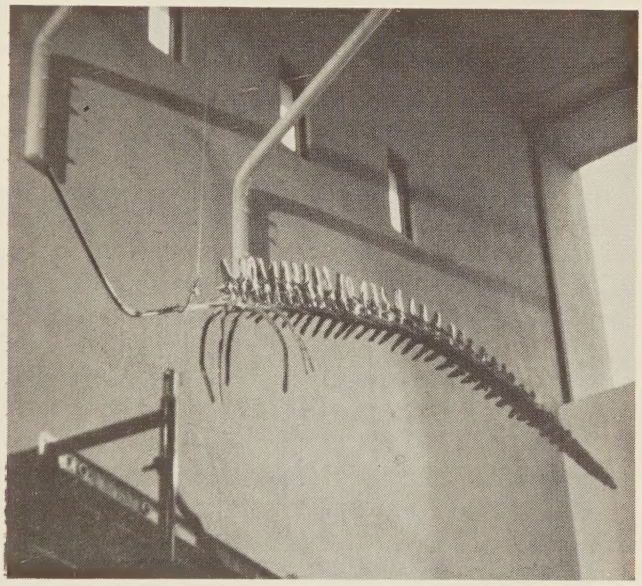

Figure 14. Partially completed mount with vertebrae added up to the lower rib cage.

A steel pipe was bent to the desired shape of the vertebral column and suspended by cables. Holes were drilled through the center of the vertebrae and each strung onto the pipe (Figures 11-14). The ribs, flippers, and skull with attached jaws were attached to the vertebral column, completing the mount (Figures 15-16). The original skull and lower jaws were placed in a display case below the mount.

At the dedication ceremony, the completed mount was transferred to the Mississippi Museum of Natural Science by the Mississippi Gem and Mineral Society. Governor William Winter accepted the fossil whale on behalf of the State of Mississippi as its state fossil.

ACKNOWLEDGMENTS: The photographs in figures 1-14 are copies from slides provided by Sue Pitts (Figures 1-2) and Eleanor Daly (Figures 3-14).

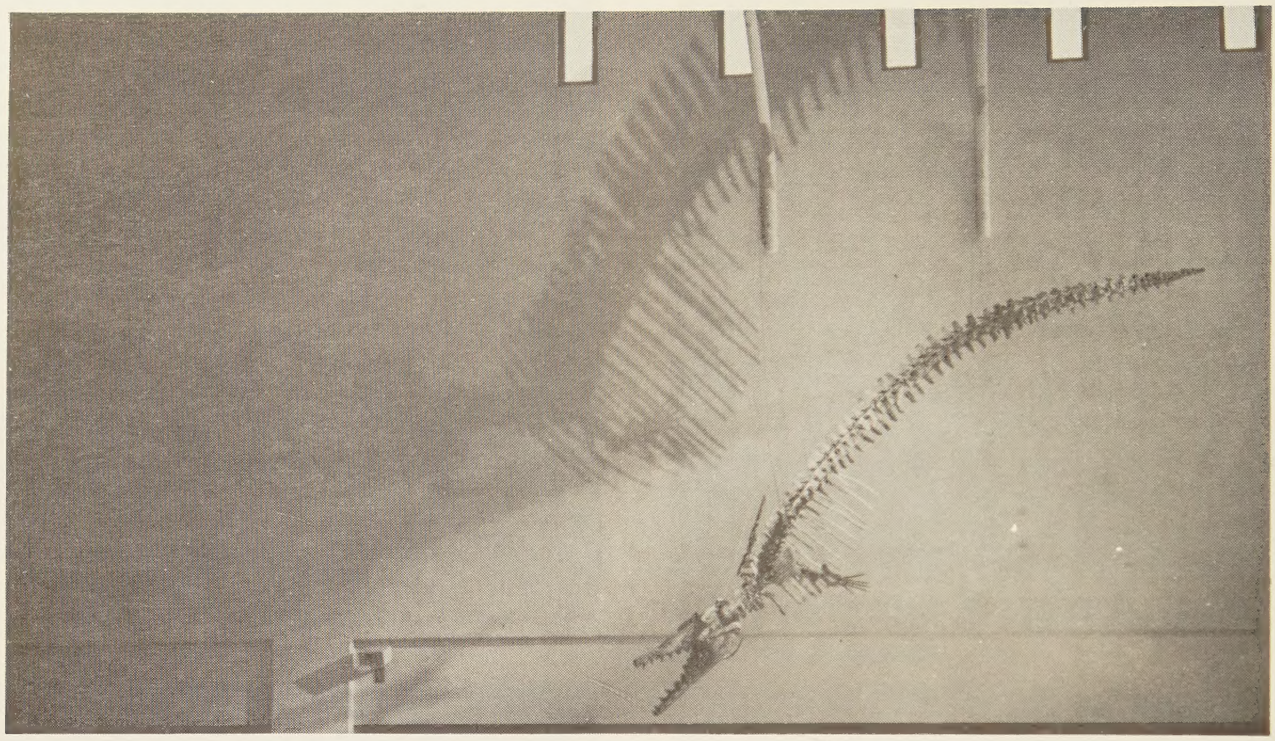

Figure 15. The complete skeletal mount as it now hangs, casting its shadow on the back wall of the Mississippi Museum of Natural Science.

Figure 16. View of the mount from below as the whale appears to dive toward the observer.

INDEX TO *MISSISSIPPI GEOLOGY*, VOLUMES 1-5

compiled by
Michael B. E. Bograd
Mississippi Bureau of Geology

The Index to *Mississippi Geology*, Volumes 1-5, has three parts: a list of the contents of each issue, an author index, and a title index. Also included is a list of the back issues, showing which are out of print and which are available.

The Contents list names each of the items in each issue, whether a full article, a news note, a notice of a new publication, an oil and gas production table, a calendar of events, a review, or an obituary. The Author Index is an alphabetical listing of authors, including junior authors, of articles and other items for which an author's name was printed. The Title Index is an alphabetical listing of article titles; it can be used to locate an article or subject of interest. The numbers at the end of each entry in the author and title indexes give the volume, number, and page numbers for that article. For example: 1(2), 1-3 signifies Volume 1, Number 2, pages 1 through 3.

MISSISSIPPI GEOLOGY

Contents

Volume 1, Number 1, September 1980

COAL RESOURCES OF THE PENNSYLVANIAN POTTSVILLE FORMATION IN NORTHEASTERN MISSISSIPPI, R. J. Tarbutton

COLOR PATTERNS OF SOME EOCENE MOLLUSCS, David T. Dockery

THE BUREAU OF GEOLOGY'S ELECTRICAL LOGGING PROGRAM, Danny W. Harrelson, William D. Easom, and Willis H. Johnson

Selected List of Bureau of Geology Library Acquisitions for the Past Year

Oil and Gas Drilling Activity in Mississippi and Neighboring States (table)

Bureau of Geology Sample Repository

Bureau of Geology Publication Sales

Calendar Events 1980

Volume 1, Number 2, December 1980

ARCHAEOCETES: WHALE-LIKE MAMMALS FROM THE EOCENE OF MISSISSIPPI, Michael K. Frazier

MISSISSIPPI SURFACE MINING AND RECLAMATION - A WORKING EXAMPLE, Chuck Estes

THE LOWER TUSCALOOSA OF SOUTHERN MISSISSIPPI, Dora M. Devery

SELECTED REFERENCES ON THE SMACKOVER FORMATION, compiled by Anne Bellomy

New Bureau of Geology Publications - Abstracts: Bulletin 121, Clarke County Geology, Water Resources; Bulletin 122, Invertebrate Macropaleontology Clarke County Area

1850-1980 - Geology Celebrates 130 Years of Service to Mississippi

Calendar of Events, 1981 January - March

Drilling Activity in Mississippi

Volume 1, Number 3, March 1981

SELECTED REFERENCES ON THE SOUTHERN APPALACHIANS, ALABAMA AND TENNESSEE, compiled by Anne Bellomy

MINERALS IN MISSISSIPPI, Bryant Mather

NEW OCCURRENCES OF MOLLUSCAN SPECIES IN THE MOODYS BRANCH FORMATION AT JACKSON, MISSISSIPPI, John E. Robinson and David T. Dockery

Report on the Research Conference on the Geology of the Woodbine and Tuscaloosa Formations, Ernest E. Russell

Highlights of 1980 Oil and Gas Exploration in Mississippi

Computer Terminal

Calendar of Events, March - June 1981

Volume 1, Number 4, June 1981

HOSSTON AND SLIGO FORMATIONS IN SOUTH MISSISSIPPI, Dora M. Devery

EARTHQUAKES IN MISSISSIPPI, Michael B. E. Bograd

IGNEOUS ROCKS OF THE JACKSON DOME, HINDS-RANKIN COUNTIES, MISSISSIPPI, Danny W. Harrelson

MISSISSIPPI BUREAU OF GEOLOGY LIBRARY, Anne Bellomy

SELECTED REFERENCES ON THE BLACK WARRIOR BASIN - STRATIGRAPHY AND HYDROCARBON POTENTIAL, compiled by Anne Bellomy

Report on the Annual Meeting of the Geological Society of America, Southeastern Section, Daniel A. Sundeen

Upper Eocene Carcharodons in Mississippi, David T. Dockery

New Bureau of Geology Publication: Compilation of Producing Formations in Mississippi

Petrographic Laboratory

Calendar of Events, 1981 June - October

Volume 2, Number 1, September 1981

MISSISSIPPI LIGNITE - ENERGY FOR THE FUTURE, Charles Estes

THE LOBSTER *LINUPARUS* PRESERVED AS AN ATTACHMENT SCAR ON THE OYSTER *EXOGYRA COSTATA*, RIPLEY FORMATION (LATE CRETACEOUS), UNION COUNTY, MISSISSIPPI, Gale A. Bishop

MACROFOSSIL ASSEMBLAGES OF THE MOODYS BRANCH FORMATION (UPPER EOCENE), LOUISIANA AND MISSISSIPPI, Susan R. Elder and Thor A. Hansen

Mississippi Oil and Gas Statistics, 1st Quarter 1981

Calendar of Events, 1981 October - December

Volume 2, Number 2, December 1981

FOSSIL WOOD FROM THOMPSON CREEK, YAZOO COUNTY, MISSISSIPPI, Will H. Blackwell and George H. Dukes

GEOHYDROLOGY OF THE LOCAL AQUIFER, TATUM DOME, W. Howard Johnson and Danny W. Harrelson

SPHAEROCYPRAEA JACKSONENSIS (JOHNSON) FROM THE MOODYS BRANCH FORMATION (EOCENE), MISSISSIPPI, Luc Dolin and Cyrille Dolin

Mississippi Oil and Gas Statistics, 2nd Quarter 1981

Calendar of Events, 1982 January - March

Volume 2, Number 3, March 1982

A NEW SPECIES OF THE TURTLE BARNACLE *CHELONIBIA* LEACH, 1817, (CIRRIPEDIA, THORACICA) FROM THE OLIGOCENE MINT SPRING AND BYRAM FORMATIONS OF MISSISSIPPI, Victor A. Zullo

LESUEUR'S WALNUT HILLS FOSSIL SHELLS, David T. Dockery

Highlights of 1981 Oil and Gas Exploration in Mississippi, Dora M. Devery

Recent Acquisitions, Bureau of Geology Library, compiled by Carolyn Woodley

New Publication: Map GQ 95-SW, Braxton Quadrangle

Mississippi Oil and Gas Statistics, 3rd Quarter 1981

Calendar of Events, 1982 March - June

Volume 2, Number 4, June 1982

THE WAYNESBORO SAND, W. Howard Johnson

FOSSIL HOP-HORNBEAM WOOD FROM RANKIN COUNTY, CENTRAL MISSISSIPPI, Will H. Blackwell and George H. Dukes

Recent Acquisitions, Bureau of Geology Library, compiled by Carolyn Woodley

Letter - Frederic F. Mellen

Mississippi Oil and Gas Statistics, 4th Quarter 1981

Calendar of Events, 1982 June - September

Volume 3, Number 1, September 1982

NOTES ON MIDDLE ORDOVICIAN, MISSISSIPPI AND ALABAMA, Frederic F. Mellen

A NEW SPECIES OF *BALANUS* DA COSTA, 1778, (CIRRIPEDIA) FROM THE UPPER OLIGOCENE CHICKASAWHAY FORMATION OF MISSISSIPPI AND ALABAMA, Victor A. Zullo

Infrared Spectrographic and Petrographic Analysis of the Wilcox Lignites in Mississippi (abstract), Franz Froelicher and Frank Pescatore, Jr.

Petrographic and Fluorescent Analysis of Wilcox Lignites in Lauderdale County, Mississippi (abstract), Franz Froelicher and Michael Wright

Mississippi Oil and Gas Statistics, 1st Quarter 1982

Calendar of Events, 1982 September - December

Volume 3, Number 2, December 1982

FOSSIL MICROALGAE (COCCOLITHOPHORIDS) IN THE YAZOO CLAY EXPOSURES AT THOMPSON CREEK, YAZOO COUNTY, MISSISSIPPI, Will H. Blackwell and Martha J. Powell

AN OVERVIEW OF OIL AND GAS POTENTIAL IN MISSISSIPPI, Dora M. Devery

THE OLDEST LATE CRETACEOUS DINOSAURS IN NORTH AMERICA?, Kenneth Carpenter

ew Bureau of Geology Publication: Lower Oligocene Bivalvia of the Vicksburg Group in Mississippi

ississippi Oil and Gas Statistics, 2nd Quarter 1982

alendar of Events, 1983 January - April

olume 3, Number 3, March 1983

HE GEOLOGY OF OAKVALE FIELD, Tim Moore

EW AND INTERESTING EOCENE MOLLUSCAN SPECIES FROM THE MOODYS BRANCH FORMATION, John E. Robinson

enate Concurrent Resolution No. 601 (Petrified Wood as the State Stone)

enate Concurrent Resolution No. 557 (Prehistoric Whale as the State Fossil)

ecrology (K.E.H.V.W. Palmer, C. R. Kolb, F. S. MacNeil)

ew Bureau of Geology Publication: Mineral Producers Directory, 1982

lississippi Oil and Gas Statistics, 3rd Quarter 1982

alendar of Events, 1983 April - June

olume 3, Number 4, June 1983

OURCE OF THE VOLCANIC PRECURSOR TO UPPER CRETACEOUS BENTONITE IN MONROE COUNTY, MISSISSIPPI, Robert K. Merrill

HE NORTHEAST MISSISSIPPI EARTHQUAKES OF 29 JANUARY AND 5 FEBRUARY, 1983, Ann G. Metzger

ecent Acquisitions, Bureau of Geology Library, compiled by Carolyn Woodley

lississippi Oil and Gas Statistics, 4th Quarter 1982

alendar of Events, 1983 June - October

olume 4, Number 1, September 1983

THORACOSAURUS NEOCESARIENSIS (DE KAY, 1842) (CROCODYLIA: CROCODYLIDAE) FROM THE LATE CRETACEOUS RIPLEY FORMATION OF MISSISSIPPI, Kenneth Carpenter

Mississippi Oil and Gas Statistics, 1st Quarter 1983

Calendar of Events, 1983 October - December

Volume 4, Number 2, December 1983

FOSSIL WOOD FROM BAYOU PIERRE AND WHITE OAK CREEK, SOUTHWEST - CENTRAL MISSISSIPPI, Will H. Blackwell, Martha J. Powell, and George H. Dukes

NOTES ON THE LOWER OLIGOCENE OYSTERS OF MISSISSIPPI, Harold W. Harry and David T. Dockery

Necrology (F. Endom), by Frederic F. Mellen

Mississippi Oil and Gas Statistics, 2nd Quarter 1983

Calendar of Events, 1984 January - April

Volume 4, Number 3, March 1984

PALEOENVIRONMENTAL RECONSTRUCTION OF THE VICKSBURG GROUP (OLIGOCENE), WARREN COUNTY, MISSISSIPPI, Ramsey Fisher and Kevin Ward

REPLY TO A REVISION OF THE HATCHETIGBEE AND BASHI FORMATIONS, David T. Dockery, Charles W. Copeland, and Paul F. Huddlestun

New Bureau of Geology Publication: Economic Minerals Map of Mississippi, 1983

Mississippi Oil and Gas Statistics, 3rd Quarter 1983

Calendar of Events, 1984 April - June

Volume 4, Number 4, June 1984

EXCAVATION OF A MASTODON AT VICKSBURG, MISSISSIPPI, S. Cragin Knox and Sue Pitts

New Bureau of Geology Publication: Mineral Producers Directory, 1984

Mississippi Oil and Gas Statistics, 4th Quarter 1983

Calendar of Events, 1984 July - October

Volume 5, Number 1, September 1984

AGE OF THE UPPER YAZOO FORMATION IN CENTRAL MISSISSIPPI, David T. Dockery and William G. Siesser

A Review by Frederic F. Mellen - Petroleum Potential of the Niobrara Formation in the Denver Basin: Colorado and Kansas

New U.S. Geological Survey Publication: A Selected Bibliography of Water Resources Publications for Mississippi

Mississippi Geological Society Donation to Bureau of Geology Library

New Topographic Map Prices

Call for Papers - Mississippi Academy of Sciences 1985 Annual Meeting

Education Opportunities - Jackson Engineering Graduate Program

Mississippi Oil and Gas Statistics, 1st Quarter 1984

Calendar of Events, 1984 October - December

Volume 5, Number 2, December 1984

CRISIS EVENTS FOR PALEOGENE MOLLUSCAN FAUNAS IN THE SOUTHEASTERN UNITED STATES, David T. Dockery

BOTRYOIDAL GOETHITE FROM THE CITRONELLE FORMATION (PLIOCENE - PLEISTOCENE) IN LINCOLN COUNTY, MISSISSIPPI, David T. Dockery and Delbert E. Gann

LOWER DEVONIAN (HELDERBERGIAN) TRILOBITES FROM THE ROSS LIMESTONE IN MISSISSIPPI, David T. Dockery and Robert K. Merrill

History of the Earth Sciences Society - notice

Calendar of Events, 1985 March - June

Volume 5, Number 3, March 1985

RESIDUAL COLOR PATTERNS IN MOLLUSKS FROM THE GOSPORT SAND (EOCENE), ALABAMA, Charles T. Swann and Patricia H. Kelley

CALCAREOUS NANNOPLANKTON BIOSTRATIGRAPHY OF SELECTED TERTIARY LOCALITIES IN THE PARIS, ADOUR, AND BEARN BASINS OF FRANCE AND THEIR CORRELATION WITH THE NORTH AMERICAN GULF COAST TERTIARY SEQUENCE, William G. Siesser and David T. Dockery

New Postage/Handling Fees

Calendar of Events, 1985 August - October

Volume 5, Number 4, June 1985

TAR PODS FROM THE YAZOO CLAY (UPPER EOCENE) AT CYNTHIA, MISSISSIPPI, David T. Dockery

PALEOECOLOGY OF SOME CLASSIC TERTIARY LOCALITIES IN THE AQUITAINE AND PARIS BASINS OF FRANCE, Cyrille Dolin, Luc Dolin, and Pierre Lozouet

New Bureau of Geology Publication: Bulletin 126, Newton County Geology and Mineral Resources

New Bureau of Geology Publication: IS 85-1, Core-Collection Catalog

New Bureau of Geology Publication: IS 85-2, Mineral Producers Directory, 1985

New Bureau of Geology Publication: IS 85-3, Electrical Logs of Water Wells and Test Holes on File at the Bureau of Geology - Supplement

Author Index

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Devery, Dora M., 1980, The Lower Tuscaloosa of southern Mississippi, 1(2), 6-7, 12.

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Dockery, David T., 1980, Color patterns of some Eocene molluscs, 1(1), 3-7.

ockery, David T., 1981, Upper Eocene Carcharodons in Mississippi, 1(4), 6.
ockery, David T., 1982, Lesueur's Walnut Hills fossil shells, 2(3), 7-13.
ockery, David T., 1984, Crisis events for Paleogene molluscan faunas in the southeastern United States, 5(2), 1-7.
ockery, David T., 1985, Tar pods from the Yazoo Clay (upper Eocene) at Cynthia, Mississippi, 5(4), 1-3.
ockery, David T., Charles W. Copeland, Jr., and Paul F. Huddlestun, 1984, Reply to a revision of the Hatchetigbee and Bashi formations, 4(3), 11-15.
ockery, David T., and Delbert E. Gann, 1984, Botryoidal goethite from the Citronelle Formation (Pliocene - Pleistocene) in Lincoln County, Mississippi, 5(2), 8-10.
ockery, David T., and Robert K. Merrill, 1984, Lower Devonian (Helderbergian) trilobites from the Ross Limestone in Mississippi, 5(2), 11-15.
ockery, David T., and William G. Siesser, 1984, Age of the upper Yazoo Formation in central Mississippi, 5(1), 1-10.
ockery, David T., *see also* Harry, Harold W.
ockery, David T., *see also* Robinson, John E.
ockery, David T., *see also* Siesser, William G.
olin, Cyrille, Luc Dolin, and Pierre Lozouet, 1985, Paleoecology of some classic Tertiary localities in the Aquitaine and Paris basins of France, 5(4), 4-13.
Dolin, Cyrille, *see also* Dolin, Luc
Dolin, Luc, and Cyrille Dolin, 1981, *Sphaerocypraea jacksonensis* (Johnson) from the Moodys Branch Formation (Eocene), Mississippi, 2(2), 17-19.
Dolin, Luc, *see also* Dolin, Cyrille
Dukes, George H., *see* Blackwell, Will H.
Dukes, George H., *see* Blackwell, Will H.
Dukes, George H., *see* Blackwell, Will H.
Easom, William D., *see* Harrelson, Danny W.
Elder, Susan R., and Thor A. Hansen, 1981, Macrofossil assemblages of the Moodys Branch Formation (upper Eocene), Louisiana and Mississippi, 2(1), 6-11.
Estes, Charles (Chuck), 1980, Mississippi surface mining and reclamation - a working example, 1(2), 4-5.
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Gann, Delbert E., *see* Dockery, David T.
Hansen, Thor A., *see* Elder, Susan R.
Harrelson, Danny W., 1981, Igneous rocks of the Jackson Dome, Hinds-Rankin counties, Mississippi, 1(4), 7-13.
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Harrelson, Danny W., *see also* Johnson, W. Howard
Harry, Harold W., and David T. Dockery, 1983, Notes on the lower Oligocene oysters of Mississippi, 4(2), 7-14.
Huddlestun, Paul F., *see* Dockery, David T.
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Johnson, Willis H., *see also* Harrelson, Danny W.
Kelley, Patricia H., *see* Swann, Charles T.
Knox, S. Cragin, and Sue Pitts, 1984, Excavation of a mastodon at Vicksburg, Mississippi, 4(4), 1-10.
Lozouet, Pierre, *see* Dolin, Cyrille
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Powell, Martha J., *see* Blackwell, Will H.
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MISSISSIPPI GEOLOGY

Title Index

Age of the upper Yazoo Formation in central Mississippi, 5(1), 1-10.
Archaeocetes: whale-like mammals from the Eocene of Mississippi, 1(2), 1-3.
Botryoidal goethite from the Citronelle Formation (Pliocene-Pleistocene) in Lincoln County, Mississippi, 5(2), 8-10.
Bureau of Geology's electrical logging program, The, 1(1), 8-10.
Calcareous nannoplankton biostratigraphy of selected Tertiary localities in the Paris, Adour, and Bearn basins of France and their correlation with the North American Gulf Coast Tertiary sequence, 5(3), 9-19.
Coal resources of the Pennsylvanian Pottsville Formation in northeastern Mississippi, 1(1), 1-2.
Color patterns of some Eocene molluscs, 1(1), 3-7.
Crisis events for Paleogene molluscan faunas in the southeastern United States, 5(2), 1-7.
Earthquakes in Mississippi, 1(4), 4-6.
Excavation of a mastodon at Vicksburg, Mississippi, 4(4), 1-10.
Fossil hop-hornbeam wood from Rankin County, central Mississippi, 2(4), 10-14.
Fossil microalgae (coccolithophorids) in the Yazoo Clay exposures at Thompson Creek, Yazoo County, Mississippi, 3(2), 1-5.
Fossil wood from Bayou Pierre and White Oak Creek, southwest-central Mississippi, 4(2), 1-6.
Fossil wood from Thompson Creek, Yazoo County, Mississippi, 2(2), 1-6.
Geohydrology of the Local Aquifer, Tatum Dome, 2(2), 7-15.
Geology of Oakvale Field, The, 3(3), 1-8.
Highlights of 1981 oil and gas exploration in Mississippi, 2(3), 14.
Hosston and Sligo formations in south Mississippi, 1(4), 1-3, 20.
Igneous rocks of the Jackson Dome, Hinds-Rankin counties, Mississippi, 1(4), 7-13.
Infrared spectrographic and petrographic analysis of the Wilcox lignites in Mississippi (abstract), 3(1), 6-7.
Lesueur's Walnut Hills fossil shells, 2(3), 7-13.
Lobster *Linuparus* preserved as an attachment scar on the oyster *Exogyra costata*, Ripley Formation (Late Cretaceous), Union County, Mississippi, The, 2(1), 2-5.
Lower Devonian (Helderbergian) trilobites from the Ross Limestone in Mississippi, 5(2), 11-15.
Lower Tuscaloosa of southern Mississippi, The, 1(2), 6-7, 12.
Macrofossil assemblages of the Moodys Branch Formation (upper Eocene), Louisiana and Mississippi, 2(1), 6-11.
Minerals in Mississippi, 1(3), 4-11.
Mississippi Bureau of Geology Library, 1(4), 14-15.
Mississippi lignite - energy for the future, 2(1), 1-2.

ississippi surface mining and reclamation - a working example, 1(2), 4-5.
ew and interesting Eocene molluscan species from the Moodys Branch Formation, 3(3), 9-12.
ew occurrences of molluscan species in the Moodys Branch Formation at Jackson, Mississippi, 1(3), 13-15.
ew species of *Balanus* Da Costa, 1778, (Cirripedia) from the upper Oligocene Chickasawhay Formation of Mississippi and Alabama, A, 3(1), 9-14.
ew species of the turtle barnacle *Chelonibia* Leach, 1817, (Cirripedia, Thoracica) from the Oligocene Mint Spring and Byram formations of Mississippi, A, 2(3), 1-6.
ortheast Mississippi earthquakes of 29 January and 5 February, 1983, The, 3(4), 8-9.
otes on Middle Ordovician, Mississippi and Alabama, 3(1), 1-5.
otes on the lower Oligocene oysters of Mississippi, 4(2), 7-14.
ldest Late Cretaceous dinosaurs in North America?, The, 3(2), 11-17.
verview of oil and gas potential in Mississippi, An, 3(2), 6-10.
aleoecology of some classic Tertiary localities in the Aquitaine and Paris basins of France, 5(4), 4-13.
aleoenvironmental reconstruction of the Vicksburg Group (Oligocene), Warren County, Mississippi, 4(3), 1-9.
etrographic and fluorescent analysis of Wilcox lignites in Lauderdale County, Mississippi (abstract), 3(1), 7-8.
ecent acquisitions, Bureau of Geology Library, 2(3), 15.
ecent acquisitions, Bureau of Geology Library, 2(4), 9.
ecent acquisitions, Bureau of Geology Library, 3(4), 7.
eply to a revision of the Hatchetigbee and Bashi formations, 4(3), 11-15.
eport on the annual meeting of the Geological Society of America, Southeastern Section, 1(4), 16.
eport on the Research Conference on the Geology of the Woodbine and Tuscaloosa Formations, 1(3), 12.
esidual color patterns in mollusks from the Gosport Sand (Eocene), Alabama, 5(3), 1-8.
Selected references on the Black Warrior Basin - stratigraphy and hydrocarbon potential, 1(4), 17-19.
Selected references on the Smackover Formation, 1(2), 8-9.
Selected references on the southern Appalachians, Alabama and Tennessee, 1(3), 1-4.
Source of the volcanic precursor to Upper Cretaceous bentonite in Monroe County, Mississippi, 3(4), 1-6.
Sphaerocypraea jacksonensis (Johnson) from the Moodys Branch Formation (Eocene), Mississippi, 2(2), 17-19.
Tar pods from the Yazoo Clay (upper Eocene) at Cynthia, Mississippi, 5(4), 1-3.
Thoracosaurus neocesariensis (De Kay, 1842) (Crocodylia: Crocodylidae) from the Late Cretaceous Ripley Formation of Mississippi, 4(1), 1-10.
Upper Eocene Carcharodons in Mississippi, 1(4), 6.
Waynesboro Sand, The, 2(4), 1-8.

MISSISSIPPI GEOLOGY

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Volume 2, Number 4, June 1982 ..... available
Volume 3, Number 1, September 1982 ..... available
Volume 3, Number 2, December 1982 ..... available
Volume 3, Number 3, March 1983 ..... available
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Volume 4, Number 1, September 1983 ..... available
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Volume 4, Number 3, March 1984 ..... available
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Articles submitted to *Mississippi Geology* may include an abstract, introduction, previous investigations, methods, discussion, conclusions, acknowledgments, and references cited. Article length should be approximately 1500 to 2500 words; brevity and conciseness are stressed. Those papers having less than 1500 words need not include an abstract.

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Confucius

INDEX ISSUE

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Jackson, Mississippi 39216

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JACKSON MISS. FEB 28 '86
U.S. POSTAGE
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P.B. METER 6012541

Serials Section-Univ. of
Illinois at Chicago Circle
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Chicago, IL 60680

Mississippi Geology is published quarterly in March, June, September, and December by the Mississippi Department of Natural Resources, Bureau of Geology. Contents include research articles pertaining to Mississippi geology, news items, reviews, and listings of recent geologic literature. Readers are urged to submit letters to the editor and research articles to be considered for publication; format specifications will be forwarded on request. For a free subscription or to submit an article, write to:

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